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SYNOPSIS OF THE GENUS *SALTUSAPHIS*. (APHIDIDÆ—HOM.).

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The genus *Saltusaphis* was erected by Theobald for his species *scirpus* from Egypt. A study of a number of American species found on sedges and in marshy localities indicates that there are at least five species of this genus in America. Two of these have been already described in other genera, viz., *Brachycolus ballii* Gill. and *Chaitophorus flabellus* Sanb.

Gillette (Ent. News, vol. XXII, p. 441) has also described another species in the genus *Brachycolus*, but this species, *trilici*, seems to be a typical member of the genus and closely related to the type species, while *ballii* on the other hand is not. *Flabellus*, while described as a *Chaitophorus* by Sanborn, has been re-described by Gillette and placed in the genus *Callipterus*. The erection of Theobald's genus leaves little doubt in regard to the true position of *flabellus*. The genus may be defined as follows:

Genus **Saltusaphis**.

Body somewhat elongate; head large, eyes prominent, without ocular tubercles. Thorax large with well-defined segments. Antennæ of six segments, usually as long as the body; legs with the two anterior pairs of femora somewhat swollen. Cornicles short and cup-shaped; cauda knobbed; anal plate widely bilobed, posterior extremity of dorsum of abdomen sometimes indented, often deeply so. Fore wing with the media twice branched, hind wing with one oblique vein near its extremity. Wing veins usually bordered with dusky brown; sexes apterous, living in marshy regions, usually on sedges.

The species of this genus present a very characteristic appearance on their host plant. They lie closely appressed to the leaf with their antennæ stretched out parallel in front of the head. When disturbed or alarmed they fall suddenly, or spring from the

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plant, aided by the large muscles of their anterior and middle femora. All sections of the leaf are attacked, specimens being found close to the ground or far out at the tips of the leaves. The sexes appear on the leaf very similar to the viviparous forms, with the exception of the smaller size. The genus belongs to the Callipterini, but seems to be quite distinct from the other genera in the tribe.

It would appear that Theobald has been led into the error of describing the cauda as bifid by the very marked division on the last abdominal segment in the type species. In examining *scirpus* this is the most apparent structure on the caudal portion of the abdomen. The cauda, however, is distinctly knobbed, and the anal plate in the apterous forms appears almost as two distinct plates. This is more plainly seen in some of the other species than in *scirpus*.

The species may be separated by the following key:

KEY TO SPECIES.

(Based on Apterous Form.)

1. Antennæ not much longer than half the body length, and about equal in length to the distance between the vertex and the hind coxæ..... *ballii* (Gill.).
Antennæ much longer than the distance between the vertex and the hind coxæ, usually as long as the body..... 2
2. Posterior extremity of the abdomen quite distinctly bilobed..... 3
Posterior extremity of the abdomen not distinctly bilobed..... 4
3. Body covered with fan-shaped or sickle-shaped hairs; vertex not strongly conical..... *scirpus* Theo.
Body without hairs excepting simple ones on the caudal portion; vertex strongly conical..... *elongatus* Baker.
4. Body covered with fan-shaped hairs about 0.016 mm. long..... 5
Body with slightly knobbed hairs about 0.05 mm. long..... *americanus* Baker

5. Segment III of antenna considerably shorter than width of head across the eyes; colour brownish yellow with blackish markings.....*flabellus* (Sanb.)
 Segment III of antennæ considerably longer than width of head across the eyes; colour pale yellowish green with dusky markings.....*virginicus* Baker.

***Saltusaphis americanus*, n. sp.**

Apterous viviparous female.—General colour reddish yellow; vertex dusky brown, which colour extends caudad on each side to form two large dusky lateral areas on top of head; a rather narrow median area yellow. Thorax with a large, irregular, dark brown patch on each side. Abdomen with similar lateral patches which include the cornicles. Cauda dusky. Femora, proximal extremity of the tibiæ and the tarsi dusky brown. Eyes reddish brown. Antennæ brown with base of III yellowish.

Length from vertex to tip of cauda 1.84 mm.; hind tibia 0.64 mm. Dorsum of body covered with hairs which are situated on rather prominent tubercles. These hairs are about 0.05 mm. long and somewhat expanded at their tips. Extremity of the abdomen scarcely at all divided. Cauda and anal plate usual.

The apterous forms of this species are similar in general appearance to those of *flabellus* Sanb., but are easily distinguished from those of that species by the body hairs.

Apterous male.—General colour similar to that of the viviparous form and with similar markings, but these much fainter. Length from vertex to tip of cauda 1.04 mm.; hind tibia 0.608 mm. Body with hairs of about the same length as those of the viviparous form, but with them little, if at all, expanded at tips.

Antennæ with the following measurements: III, 0.48 mm.; IV, 0.32 mm.; V, 0.32 mm.; VI, (0.128+0.256 mm.). Segments very finely and closely imbricated; III, with 20 to 25 very small, circular sensoria in an uneven row along the segment; IV, with 9 or 10; V, with about 9; VI, with sometimes one on the base of segment beside the usual sensoria at the base of the unguis.

Oviparous female.—Colour very similar to that of the viviparous form, with the colours possibly darker. Length from vertex to tip of cauda 1.6 mm.; antennæ as follows: Segment III,

0.576 mm.; IV, 0.32 mm.; V, 0.304 mm.; VI, (0.16 mm.+0.256 mm.). All segments without sensoria excepting the permanent ones. Body hairs similar to those of the viviparous form. Hind tibiae 0.672 mm.; somewhat swollen and thickly covered on its proximal two-thirds with almost circular or somewhat oval sensoria.

Described from specimens on balsam mounts made by Mr. H. B. Scammell, the specimens taken on bog grass, Whitesbog, N. J., Oct. 21, 1914.

Type in U. S. Nat. Museum Cat. No. 26719.

***Saltusaphis ballii*, (Gill.).**

Brachycolus ballii Gillette, Can. Ent., vol. XL, p. 67; Ent. News, vol. XX, p. 119.

Specimens of this species are in the collection of the U. S. Nat. Museum, taken on *Scirpus sylvaticus* at Richfield Springs, N. Y., by Theo. Pergande, No. 4052, and typical specimens on *Carex nebraskiensis* collected at Ft Collins, Colo., 5-30-10, by Bragg. These later specimens were deposited in the Museum collection as types by Prof. C. P. Gillette. Oviparous females are in the collection taken on 3-square, Whitesbog, N. J., 11-13-15 by H. B. Scammell.

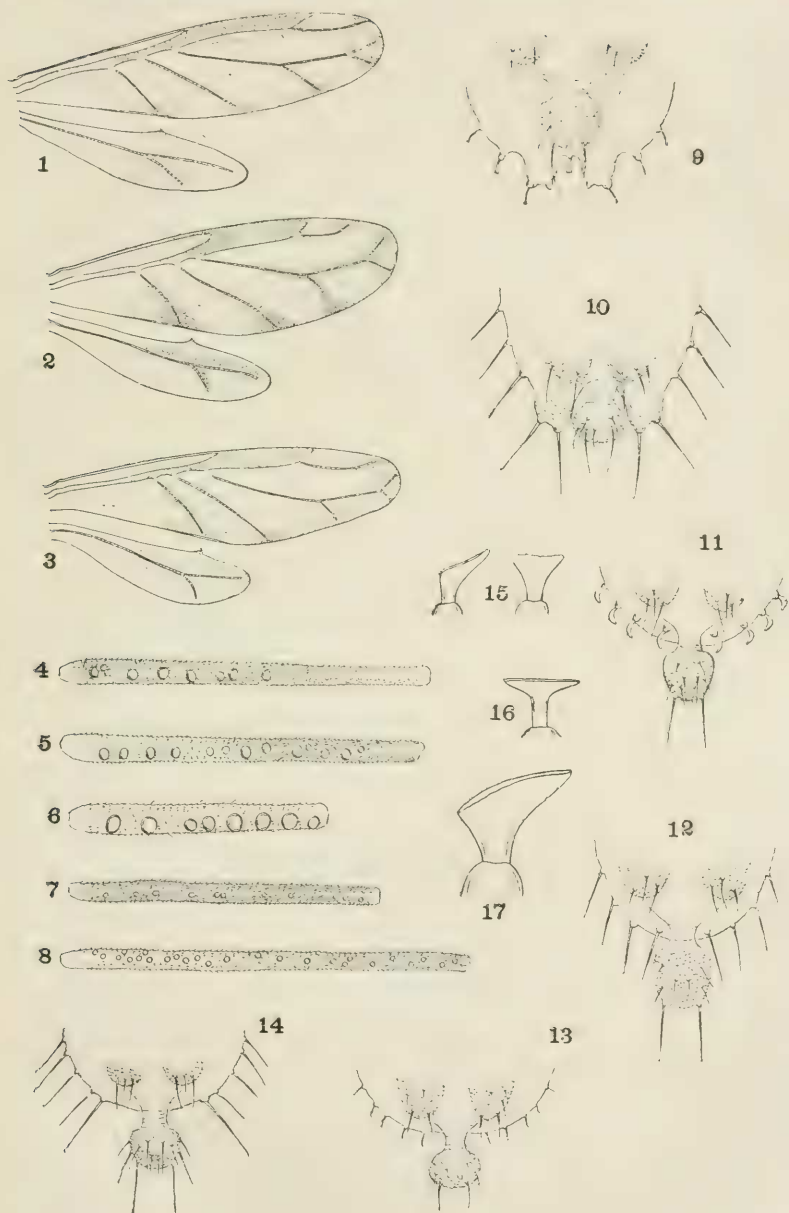
The species has shorter antennae than the other members of the genus, but is very similar in many ways to *americanus* and *flabellus*. The body hairs are short, stout and spine-like.

***Saltusaphis elongatus*, n. sp.**

Only oviparous females of this species have been seen by the writer, but since they are so very different from any of the other species in the genus, no difficulty will be experienced in separating the species at once in this form.

General colour orange yellow, uniform, with the exception of a number of dusky flecks along the margins of the abdomen. Eyes deep wine colour; antennae, from the basal portion of segment III to the tip, dark brown to black.

Length from vertex to tip of cauda 2.34 mm.; hind tibiae 0.64 mm.; scarcely at all swollen, and covered on its proximal portion with a number of sensoria. These are nothing like as abundant as in the species *americanus* and *virginicus*. Antennae as follows:



SALTUSAPHIS—STRUCTURAL DETAILS. (See p. 9)

Segment III, 0.832 mm.; IV, 0.352 mm.; V, 0.4 mm.; VI, (0.176 mm.+0.256 mm.). Vertex much produced, conical, acutely pointed. Cauda and anal plate usual, extremity of the abdomen quite deeply cleft. Body without hairs, excepting at the posterior portion, where it is armed with simple hairs about 0.064 mm. long.

Described from specimens in balsam mounts, the specimens collected by H. B. Scammell and H. K. Plank at Whitesbog, N. J., Oct. 21, 1914. Taken on bog grass.

Type in U. S. Nat. Museum, Cat. No. 20720.

***Saltusaphis flabellus* (Sanb.)**

Chaitophorus flabellus Sanborn—Kans. Univ. Sci. Bul., vol III, No. 1, p. 37.

Callipterus flabellus (Sanb.) Gillette, Ent. News, vol. XX, p. 120.

Specimens of this species are in the collection of the U. S. Nat. Museum as follows: One specimen taken May 4, 1903, host unknown, at Lawrence, Kansas, by C. E. Sanborn, Type. Specimens collected on *Carex* in May, 1911, and deposited in the collection by Prof. Gillette, and specimens collected by Mr. Bragg on *Carex* at Ft. Collins, Colo., 5-6-12, and deposited in the Museum collection by Prof. Gillette.

There is considerable variation in the colour in the different specimens, some being generally mottled on the dorsum, while others have a distinct, heavy marking down each side on the dorsal area. The fan-shaped spines are, however, the same on all.

***Saltusaphis scirpus* Theobald.**

Saltusaphis scirpus Theobald, Bul. Ent. Research, vol. VI, pt. 2, p. 138.

The writer has never seen alate forms of this species, but through the kindness of Mr. J. J. Davis he has been able to examine an apterous paratype. In the bifid nature of the extremity of the abdomen the species is related to *elongatus*. In other characters, however, it is more closely related to *virginicus*. This resemblance is particularly noticeable in the body hairs. On the posterior extremity of the abdomen the hairs are more elongate than elsewhere, measuring fully 0.048 mm. They are somewhat knobbed, even on the posterior extremity. Only the proximal segments

of the antennæ are present on the specimen. These measure as follows: I, 0.112 mm.; II, 0.064 mm.; III, 0.608 mm.; IV, 0.304 mm. Hind tibia 0.592 mm., hind tarsus 0.144 mm.

***Saltusaphis virginicus*, n. sp.**

Alate viviparous female.—General colour yellowish, marked with dark brown; head with smoky to black background and median yellowish stripe; eyes dark reddish brown. Prothorax similarly marked. Thorax yellow with dark brown lobes; abdomen yellow with lateral row of dark brown or black areas, and with a large, longitudinal, central area of the same colour; antennæ almost uniform dusky. Legs dusky, lighter at the joints, cornicles included on each side within one of the lateral dusky areas. Stigma and wing veins smoky, veins slightly bordered with dusky colour.

Length from vertex to tip of cauda 1.44 mm. Antennæ as follows: III, 0.432 mm.; IV, 0.304 mm.; V, 0.288 mm.; VI, (0.192 mm.+0.176 mm.). All segments very minutely and closely imbricated. Segment III, with 9 or 10 circular to oval sensoria on the basal two-thirds of the segment in an uneven row. Hind tibiæ 0.688 mm.; hind tarsus 0.112 mm. Fore wing 2.16 mm. long by 0.64 mm. wide. Media distinctly angled. Cornicles very shallow and small. Abdomen densely covered with minute projections.

Apterous viviparous female.—General colour yellowish green. Head unmarked, eyes reddish brown. Body almost uniform yellowish in some specimens, while in others faint, longitudinal, dusky lines are present, extending from the head to tip of abdomen. Antennæ with the basal portion of segment III yellowish, the remainder dusky to black. Legs uniform yellowish or with light dusky areas near the distal extremities of the femora and with the tarsi dusky.

Length from vertex to tip of cauda 2.16 mm.; width across abdomen 0.672 mm., vertex somewhat conical; antennæ as follows: III, 0.464 mm.; IV, 0.336 mm.; V, 0.288 mm.; VI, (0.208 mm.+0.16 mm.). Hind tibiæ, 0.672 mm.; hind tarsus, 0.128 mm.; entire dorsum covered with small, mushroom or fan-like hairs. Posterior extremity of abdomen scarcely indented.

Apterous male.—General colour similar to that of the apterous viviparous female, but with very little of a yellow tint. Segments

of the body indicated by narrow, smoky, cross stripes. Antennæ black with the exception of the basal two segments and the proximal extremity of segment III. A black rim borders the antennal sockets. Eyes dark brown.

Length from vertex to tip of cauda 1.6 mm. Antennæ as follows: Segment III, 0.4 mm.; IV, 0.256 mm.; V, 0.256 mm.; VI, (0.175 mm.+0.144 mm.). Segment III is armed with a row of about 12 sensoria, which are minute and circular. Segment IV is without sensoria or with 2 or 3 very minute ones. Segment V has a row of about 6, while the base of segment VI has usually the same number. Hind tibia 0.56 mm.; hind tarsus 0.112 mm.

Oviparous female.—Colour very similar indeed to that of the male. The femora, however, have a distinct dusky spot near their distal extremity, and the tibiæ are more dusky than those of the male.

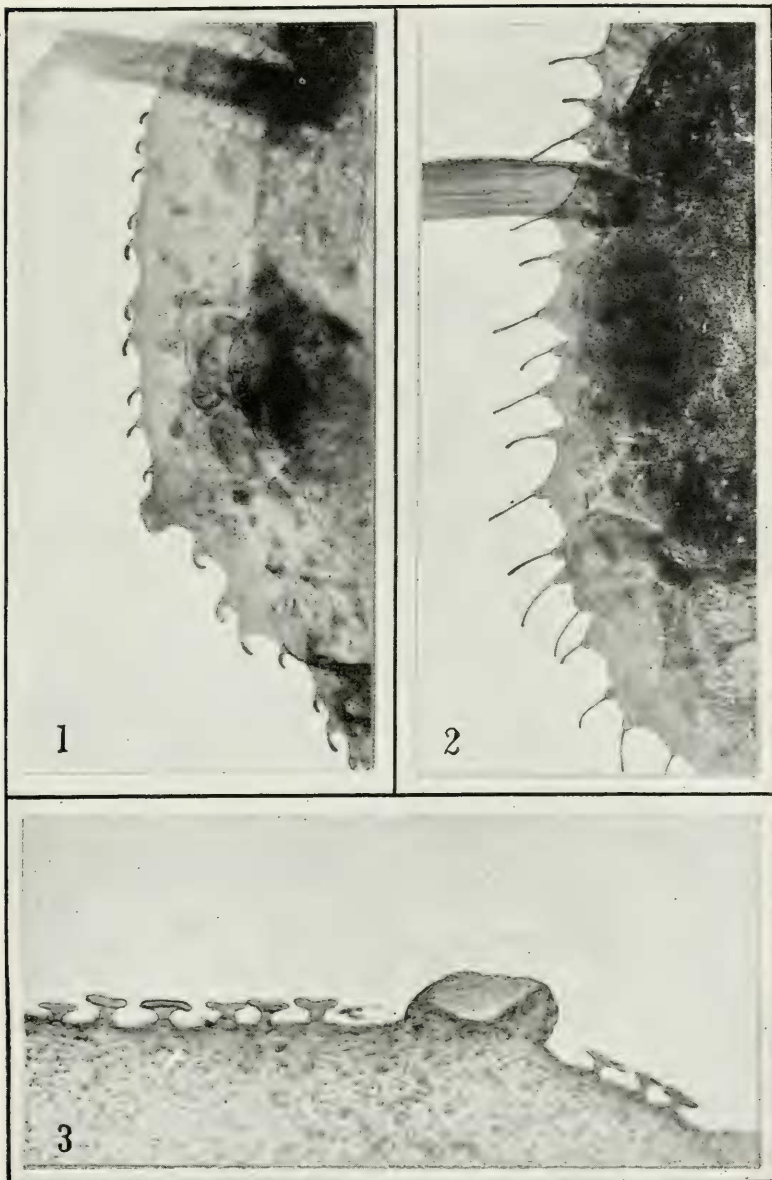
Length from vertex to tip of cauda 1.84 mm. Antennæ as follows: Segment III, 0.416 mm.; IV, 0.304 mm.; V, 0.112 mm.; VI, (0.176 mm.+0.176 mm.). All segments without sensoria, excepting the permanent one. Hind tibia 0.688 mm., somewhat swollen and densely covered with circular, or somewhat elongated sensoria. Body covered with the mushroom-like hairs described in the viviparous forms.

Described from specimens reared by the writer at East Falls Church, Va., during Oct., 1916, on *Carex* sp.

Type in U. S. Nat. Museum Cat. No. 20721.

EXPLANATION OF PLATES I, II AND III.

- Plate 1, Fig. 1. Head of apterous viviparous form of *S. americanus*.
 " " 2. Head of apterous viviparous form of *S. ballii*.
 " " 3. Head of oviparous form of *S. elongatus*.
 " " 4. Head of apterous viviparous form of *S. flabellus*.
 " " 5. Head of apterous viviparous form of *S. scirpus*.
 " " 6. Head of apterous viviparous form of *S. virginicus*.
 Plate 2, Fig. 1. View of portion of abdomen of *S. flabellus* showing hairs.
 " " 2. View of portion of abdomen of *S. americanus* showing hairs.
 " " 3. View of portion of abdomen of *S. virginicus* showing hairs.



SALTUSAPHIS—STRUCTURAL DETAILS.
(See p. 8.)